Figure IV. 1: The HPLC profile of extracts of retrocerebral complexes of *O. nitidula*. The analysis was carried out on a C\textsubscript{18} Hibar column. The extract was run with a gradient of 43-53% B in 20 min and then to 70% B within a further 6 min (solvent A=0.01% trifluoro acetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 and 280 nm.

Figure IV. 2: HPLC profile of corpora cardiaca extract of *O. nitidula* (A) monitored at 210 and 280 nm. Fractions were collected and tested for hyperlipaemic activity. The change in total haemolymph lipid is represented in histogram (B) as E/C%. (*) Indicates *P* < 0.05
Figure IV. 3: The HPLC profiles of crude corpora cardiaca extract of *O. nitidula* (A) and synthetic Loemi- AKH- 1 (B) monitored at 210 nm. The extract was run with a gradient of 43-53% B in 20 min (solvent A=0.01% trifluoroacetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 nm. (* indicates the peaks of interest).

Figure IV. 4: The HPLC profiles of crude corpora cardiaca extract of *O. nitidula* (A) and synthetic Schgr - AKH- II (B). The extract was run with a gradient of 43-53% B in 20 min (solvent A=0.01% trifluoroacetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 nm. (*) Indicates the peaks of interest. Other peaks in the synthetic Schgr-AKH-II profile (B) probably represent impurity/degradation products.
Figure IV. 5: MALDI-MS spectrum of extract of corpora cardiaca of *O. nitidula*. The analysis was carried out in reflector positive (Na⁺) mode with an acceleration voltage of 50 Hz pulsed N₂ laser, emitting at 337 nm. Dihydroxybenzoic acid was used as matrix.

Figure IV. 6: MALDI-MS/MS spectrum of (M+Na)⁺−1181.39 Da from *O. nitidula*. Inset shows sequence assignment of the peptide, together with the theoretical and calculated masses for “y”, “b” and “a” fragment ions obtained in the MS/MS spectrum.
Figure IV. 7: MALDI MS/MS spectrum of (M+Na)⁺ = 556.31 Da from *O. nitidula*. Inset shows sequence assignment of the peptide, together with the theoretical and calculated masses for "y", "b" and "a" type fragment ions, obtained in the MS/MS spectrum.

Figure IV. 8: MALDI MS/MS spectrum of the ion (M+Na)⁺ = 1096.601 Da from *O. nitidula*. Inset shows the sequence assignment of the peptide, together with theoretical and calculated masses for "b", "y" and "a" type fragment ions, obtained in the MS/MS spectrum.
Figure IV. 10: The HPLC profile of extracts of retrocerebral complexes of *A. miliaris* (A). Fractions were collected and tested for hyperlipaemic activity. The change in total haemolymph lipid is represented (B) as E/C% in histogram. (*) Indicates $p<0.05$

Figure IV. 9: The HPLC profile of extracts of retrocerebral complexes of *A. miliaris*. The analysis was carried out on a C$_4$ Hbar column. The extract was run with a gradient of 43-53% B in 20 min and then to 70% B within a further 6 min (solvent A=0.01% trifluoroacetic acid in water, solvent B=60% acetonitrile in solvent A). The eluants were monitored at 210 and 280 nm.
Figure IV. 11: MALDI-MS profile of extracts of retrocerebral complexes of *A. miliaris*. The analysis was carried out in reflector positive mode (H)⁺ with an acceleration voltage of 50 Hz pulsed N₂ laser, emitting at 337 nm. Dihydroxybenzoic acid was used as matrix.

Figure IV. 14: HPLC profile of extracts of retrocerebral complexes of *I. limbata*. The analysis was carried out on a C₁₈ Hiber column. The extract was run with a gradient of 43-53% B in 20 min (solvent A=0.01% trifluoroacetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 nm.
Figure IV. 12: MALDI-MS spectrum of extract of corpora cardiaca of *A. miliaris*. The analysis was carried out in reflector positive (Na) mode with an acceleration voltage of 50 Hz pulsed N2 laser, emitting at 337 nm. Dihydroxybenzotric acid was used as matrix.

Figure IV. 13: MALDI-MS/MS spectrum of the ion (M+Na)=1166.53 Da from *A. miliaris*. Inset shows the sequence assignment of the peptide, together with theoretical and calculated masses for "b", "y" and "a" type fragment ions, obtained in the MS/MS spectrum.
Figure IV. 15: The HPLC profile of extracts of brain retrocerebral complexes of *I. limbata* (A). Fractions were collected and tested for hyperlipaemic activity. The change in total haemolymph lipid is represented in histogram (B) as E/C%. (*) Indicates

Figure IV. 22: The HPLC profiles of extracts of brain - retrocerebral complexes of *I. limbata* (A) and synthetic Pyrap - AKH (B) monitored at 210 nm. The analysis was carried out on a C<sub>18</sub> Hilar column. The extract was run with a gradient of 43-53% B in 20 min (solvent A=0.01% trifluoroacetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 nm. (*) Indicates the peaks of interest.
**Figure IV. 16:** HPLC profile of extracts of retrocerebral complexes of *I. limbata*. The analysis was carried out on a C<sub>18</sub> Hilar column. The extract was run with a gradient of 43-53% B in 20 min (solvent A = 0.01% trifluoroacetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 nm. Numbered are the major peaks.

**Figure IV. 17:** The HPLC profile of extracts of retrocerebral complexes of *I. limbata* (A), peak fractions were collected, tested for hyperlipaemic activity. The change in total haemolymph lipid is represented (B) as E/C % in histogram. (*) Indicates *p* < 0.05.
Figure IV. 23: The HPLC profiles of crude corpora cardiaca extract of *I. limbata* (A) and synthetic Pyrap - AKH (B) monitored at 210 nm. The analysis was carried out on a C_{18} Hibar column. The extract was run with a gradient of 43-53% B in 20 min (solvent A=0.01% trifluoroacetic acid in water, solvent B=60% acetonitrile in solvent A). The eluants were monitored at 210 nm. (*) Indicates peaks of interest.

Figure IV. 24: MALDI-MS profile of extracts of brain and retrocerebral complexes of *I. limbata*. The analysis was carried out in reflector positive mode (H^+) with an acceleration voltage of 50Hz pulsed N_2 laser, emitting at 337nm. Dihydroxy benzonic acid was used as matrix.
Figure IV. 26: MALDI MS/MS spectrum of the ion \((\text{M}+\text{H})^+\) =1000.4 Da from *I. limbata*, inset shows the sequence assignment of the peptide, together with theoretical and calculated masses for “b”, “y” and “a” type fragment ions, obtained in the MS/MS spectrum.

Figure IV. 28: The HPLC profile of extracts of retrocerebral complexes of *O. rhinoceros* (A). Fractions were collected and tested for hyperlipaemic activity. The change in total haemolymph lipid is represented in histogram (B) as E/C%. (*) Indicates \(P<0.05\)
Figure IV. 25: MALDI-MS spectrum of extract of corpora cardiaca of *I. limbata*. The analysis was carried out in reflector positive (Na)⁺ mode with an acceleration voltage of 50 Hz pulsed N₂ laser, emitting at 337 nm. Dihydroxybenzoic acid was used as matrix.

Figure IV. 27: The HPLC profile of extracts of retrocerebral complexes of *O. rhinoceros*. The analysis was carried out on a C₁₈ Hibar column. The extract was run with a gradient of 43-53% B in 20 min (solvent A=0.01% trifluoroacetic acid in water, solvent B = 60% acetonitrile in solvent A). The eluants were monitored at 210 nm.
Figure IV. 29: MALDI-MS spectrum of extract of corpora cardiaca of *O. rhinoceros*. The analysis was carried out in reflector positive mode (Na⁺) with an acceleration voltage of 50 Hz pulsed N₂ laser, emitting at 337 nm. Dihydroxybenzoic acid was used as matrix.

Figure IV. 30: MALDI MS/MS spectrum of the ion (M+Na)⁺ –1003.70 Da from *O. rhinoceros*. Inset shows the sequence assignment of the peptide, together with theoretical and calculated masses for “b”, “y” and “a” type fragment ions, obtained in the MS/MS spectrum.
PLATE III. 1

a. Gryza solidulae Walker

b. Aularches miliaris Linnæus

PLATE III. 2

a. Aularches zimbaa Stål

b. Glycytus rhinoceros Linnæus